

AMENDMENTS TO THE CLAIMS

1 (Currently Amended) A method of routing a plurality of demands in an optical network that comprises nodes interconnected by links comprising optical fibers, each demand having two end nodes, the method comprising:

a) logically subdividing the network into a plurality of rings, wherein each ring is formed by two link-disjoint paths between a pair of nodes;

b) to each of the demands, assigning a ring that contains both of the pertinent end nodes; and

c) to each of the demands, assigning two mutually link-disjoint paths on the ring from one end node to the other, wherein one said path is a working path and the other said path is a protection path; and

d) assigning at least one wavelength channel to each working path and to each protection path, resulting in a working wavelength channel on the working path and a protection wavelength channel on the protection path, wherein:

the path and wavelength-channel assignments are carried out so as to drive down a cost function;

the cost function includes, for each link, a cost component for placing a further wavelength channel on such link; and

said cost component is selected to decrease as the number of already-placed wavelength channels increases, but to jump to a highest value when the number of already-placed wavelength channels reaches the full capacity of one optical fiber.

2 (Original) The method of claim 1, wherein each of the protection paths is node-disjoint from its corresponding working path.

3 (Original) The method of claim 1, further comprising, for at least one pair of end nodes, subdividing a total demand between said end nodes into a plurality of unit demands, and wherein the assigning of working paths and protection paths is performed on the unit demands.

4 (Currently Amended) The method of claim 3, wherein ~~each link of the network comprises one or more optical fibers, and~~ one unit of demand is equivalent to the bandwidth capacity of one wavelength channel on an optical fiber.

5-6 (Canceled)

7 (Original) The method of claim 6, wherein the assignment of wavelength channels is carried out such that no two demands have the same working wavelength channel or protection wavelength channel.

8 (Canceled)

9 (Currently Amended) The method of claim ~~8~~ 1, wherein the cost function is further determined by the occupancy of ports or optical termination units at nodes of the network.

10 (Canceled)

11 (Currently Amended) The method of claim ~~10~~ 1, wherein the cost function further includes a cost component for placing wavelength ports at end nodes of the link, and the cost component is selected to decrease as the number of already-placed wavelength ports increases, but to jump to a highest value when the number of already-placed wavelength ports reaches the full capacity of one optical cross-connect.

12 (Currently Amended) The method of claim ~~8~~ 1, wherein the path and wavelength-channel assignments are carried out such that the assignments to the respective demands jointly drive down the cost function.

13 (canceled)

14 (Currently Amended) The method of claim 1, wherein ~~each link of the network comprises one or more optical fibers, and~~ rings having a common link are permitted to share optical fibers on such common link.

15 (Currently Amended) The method of claim 1, wherein:
~~each link of the network comprises one or more optical fibers;~~
~~the method further comprises assigning at least one wavelength channel to each working path and to each protection path; and~~
the assignment of wavelength channels is carried out such that on a given ring, the protection paths of two or more demands are permitted to share the same wavelength channel if the respective working paths of said demands have no common link on the given ring.

16 (Original) The method of claim 15, wherein:
two or more rings having a common link are permitted to share optical fibers on such a common link; and
each wavelength channel on such a shared optical fiber belongs exclusively to only one of the sharing rings.

17 (Original) The method of claim ~~16~~ 15, wherein each optical fiber on a given link of a ring is allocated exclusively to one ring.

18-24 (Canceled)